

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (withdrawn) A method for generating a nucleic acid molecule with precise user control, the method comprising:

- a) providing a plurality of nucleic acids immobilized on a surface;
- b) providing a nucleic acid molecule attached to a protecting group;
- c) contacting said immobilized nucleic acid molecule with said nucleic acid molecule attached to a protecting group;
- d) elongating said immobilized nucleic acid molecule; and
- e) dissociating said immobilized nucleic acid molecule from said protecting group thereby extending said immobilized nucleic acid molecule.

2. (withdrawn) The method of Claim 1, wherein said protecting group comprises proteins, carbohydrates; diphosphates, phosphate derivatives, nucleotides, oligonucleotides, or combinations thereof.

3. (withdrawn) The method of Claim 1, wherein the removal of said protecting group is accomplished by the application of heat, proteases, phosphatases, restriction enzymes, or combinations thereof.

4. (currently amended) A method for removing or controlling errors in nucleic acid molecules comprising arbitrary user-specified sequence composition and length, the method comprising:

- a) providing a solid support for synthesis of a nucleic acid;
- b) synthesizing a nucleic acid attached to the solid support;
- c) passing the solid support and the synthesized nucleic acid through a channel opening, the channel opening supporting at least one detector;

d) detecting, using the at least one detector, errors in the sequence of the synthesized nucleic acid; and

e) correcting the errors in the sequence of the synthesized nucleic acid.

5. (currently amended) A method for removing or controlling errors in nucleic acid molecules comprising arbitrary user-specified sequence composition and length, the method comprising:

a) synthesizing a nucleic acid with at least one 5' protecting group;

b) eliminating any deletion errors present in the sequence of the synthesized nucleic acid by the steps step of: ~~monitoring the deprotection of the 5' protecting group~~

deprotecting the synthesized nucleic acid by using a deprotection wash to remove at least one 5' protecting group;

flowing the deprotection wash and any removed 5' protecting group through a channel opening;

monitoring the flowed wash for the presence or absence of a removed 5' protecting group; and

recycling the flowed wash until the presence of at least one 5' protecting group is detected in the wash; and

c) repeating steps a) and b) until all deletion errors in the sequence of the synthesized nucleic acid are eliminated.

6. (withdrawn) A method for detecting the addition of nucleotides to nucleic acid molecules comprising:

a) providing a solid support for the attachment of a nucleic acid;

b) elongating said attached nucleic acid;

c) detecting the force exerted on the growing nucleic acid molecule;

d) detecting errors in nucleic acid synthesis; and

e) correcting errors in nucleic acid synthesis.

7. (withdrawn) A method for removing or controlling errors in nucleic acid molecules comprising arbitrary user-specified sequence composition and length, the method comprising the parallelization of single-molecule systems with and without arrays of light sources and detectors.

8. (withdrawn) A method for the microfabrication of quadrupole arrays, the method comprising:

a) defining bond pads and lithographically defining and depositing a layer of diagonal metal wires on a silicon substrate;

b) lithographically designing and depositing a film of soft magnetic material over a portion of the metal lines; and

c) lithographically defining and depositing a second layer of metal lines over the magnetic film layer.

9. (withdrawn) A method for independently controlling particles, the method comprising controlling said particles via an electric field, a magnetic field, optical tweezers, or any combinations thereof.

10. (withdrawn) A method for synthesizing polymers in which individual molecules are monitored during synthesis to observe and evaluate the reaction products.

11. (cancelled)

12. (currently amended) The method of claim 4, wherein the solid support is a bead or particle and further comprising the step of detecting an increase in electrophoretic force exerted by the synthesized nucleic acid on the solid support, the increase in electrophoretic force being caused by the growth of the synthesized nucleic acid as it grows.

13. (currently amended) The method of claim 5, wherein ~~a plurality of reactions comprising~~ steps (a)-(c) are carried out ~~in parallel~~ using a plurality of light sources and detectors.

14. (currently amended) The method of claim 4, wherein the synthesized nucleic acid has at least one 5' protecting group and further comprising the steps of:

eliminating any deletion errors present in the sequence of the synthesized nucleic acid by the steps step of: ~~monitoring the deprotection of the 5' protecting group~~

deprotecting the synthesized nucleic acid by using a deprotection wash to remove at least one 5' protecting group;

flowing the deprotection wash and any removed 5' protecting group through a channel opening;

monitoring the flowed wash for the presence or absence of a removed 5' protecting group;

recycling the flowed wash until the presence of at least one 5' protecting group is detected in the wash; and

repeating the step of eliminating until all deletion errors in the sequence of the synthesized nucleic acid are eliminated.

15. (currently amended) The method of claim 14, wherein the solid support is a bead or particle and further comprising the step of detecting an increase a change in electrophoretic force exerted by the synthesized nucleic acid on the solid support the increase in electrophoretic force being caused by the growth of the synthesized nucleic acid as it grows.

16. (currently amended) The method of claim 4, wherein ~~a plurality of reactions comprising steps (b) (a) - (e) are carried out in parallel~~ using a plurality of light sources and detectors.

17. (previously amended) The method of claim 4, wherein the errors in the sequence of the synthesized nucleic acid are selected from the group consisting of insertion errors, deletion errors, and wrong base incorporation errors.

18. (cancelled)